

Programming, Simulating and Cutting (Not Only) for the Operating Room

INDEX-Werke will for the first time present its new Turn-Mill Center R200 during the special show of the German Machine Tool Builder's Association (VDW) under the banner "Metal Meets Medical", jointly with Siemens. Already in September 2009, the machine was met with overwhelmingly positive response during its in-house presentation to customers and press representatives.

With the R200, INDEX sets the standard for a new generation of turning/milling centers. Two motorized milling spindles perform machining in two independent sub-systems, including 5-axis machining. Both heavy-duty roughing operations and highly-accurate fine-turning operations can be performed simultaneously on the main spindle and counter spindle. This parallel use increases productivity significantly compared to conventional designs.

New design solutions for optimum stiffness, thermal and dynamic stability, and vibration damping also provide for maximum machining quality.

New machine concepts must enable the user to respond to changing market conditions in the medical technology sector faster and more flexibly. To manufacture equally safe and reliable high-quality products under changing requirements, while achieving at least the same efficiency, additional measures must be taken, also in the machine environment. Generally, it is increasing complexity paired with decreasing lot sizes that characterizes the requirements for parts manufacturing in the future. In particular, this also applies to machining parts and end products for medical applications. Because the integration of additional functionality and progressing miniaturization of components and assemblies lead to more demanding requirements for material characteristics. And this is directly reflected in the requirements for a CNC machine: enhanced rigidity, optimized thermal and dynamic stability, and good vibration damping are mandatory. With growing individualization of custom products, suppliers are increasingly facing a widening of requirements and more demanding pressures to deliver.

The complex demands by the market and the associated versatility of requirements for CNC machines have led the engineers at Index-Werke in Esslingen, Germany, to introduce the milling/turning center R200 to the world.

During the special show “Metal Meets Medical” for manufacturing medical technology products, INDEX will focus, besides its R200, mainly on the INDEX VirtualLine, the CAD/CAM/CNC process chain showing the direct path to the part.

VirtualLine—Complexity Finds an Optimum Solution

The traditional manufacturing environments of many users mostly cannot keep pace with the soaring programming requirements of new machine concepts. The innovative INDEX VirtualLine software products now provide the adequate one-stop solution. And CNC users find support in their programming and manufacturing environments as well, being able to use their INDEX R200 with high effectiveness, utmost safety and top productivity. This is because the new INDEX VirtualLine provides dedicated software packages for the entire INDEX C200-4D control (based on SIEMENS S840D) that ensure economically optimized machine utilization right from the first workpiece.

Virtual Machine—the 1:1 Copy on your Desk

The PC-based Virtual Machine of the INDEX R200 simulates the machining process of any CNC program both vividly and realistically on the screen. And what's more, the genuine SIEMENS control software and the faithfully dimensioned INDEX geometry models of the Virtual Machine R200 allow you to display the tool and machine movements at the same level of detail and accuracy as in reality. Axis end positions, travel limits, etc. can thus be checked already on the PC and adjusted in advance remotely from the machine. And, of course, you can operate the Virtual Machine (simulation on the PC) exactly in the same way as the real production machine!

VirtualPro—the Powerful CNC Programming Studio

Developing programs for complex machining tasks is a challenge—even for experienced CNC programmers. To assist them in their work both at the PC and at the machine, INDEX has developed its VirtualPro CNC Programming Studio. It enables workpieces to be programmed more easily, set up in a shorter amount of time, and machined more safely. For this, the Virtual Machine simulates, checks, and, if necessary, corrects or optimizes each machining situation in advance just like in reality, at the same level of detail.

Overcoming Barriers With NX-CAM and INDEX Post-Processors

The progressing demands on parts geometries increasingly require cutting in 4 or even 5 axes; this leads inevitably to a CAM system with geometry import from CAD designs. Here also, the INDEX VirtualLine is optimally prepared: the integration of the SIEMENS NX CAM module (option) in VirtualPro Programming Studio—supplemented by post-processors developed and certified by INDEX—enables programming and manufacturing parts even in 5 axes with secured functionality. VirtualLine thus means: guaranteed, all inclusive machining efficiency.

INDEX VPC Box—The Writing Desk on the Machine

Complex workpiece machining requires full 'commitment'. Manufacturers producing high-end, high-quality product components need all information on the workpiece, at any time. Both at the workplace and at the CNC machine. The solution: the INDEX VPC Box as an additional operating panel computer with a high-resolution 19-inch TFT monitor. Installed behind the machine operating panel, the computer can be pulled out and thus brings the 'desk to the machine'. Network-capable, communicative and open to all (WINDOWS XP) applications. The right solution, not only for the Virtual Machine at the machine, but for every manner of software support for operators on site.

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Figure 1
The INDEX R200
turning/milling center –
a new dimension
in machining



Figure 2
Working area of the R200:
Two work spindles,
two motorized milling spindles
in two independent
subsystems

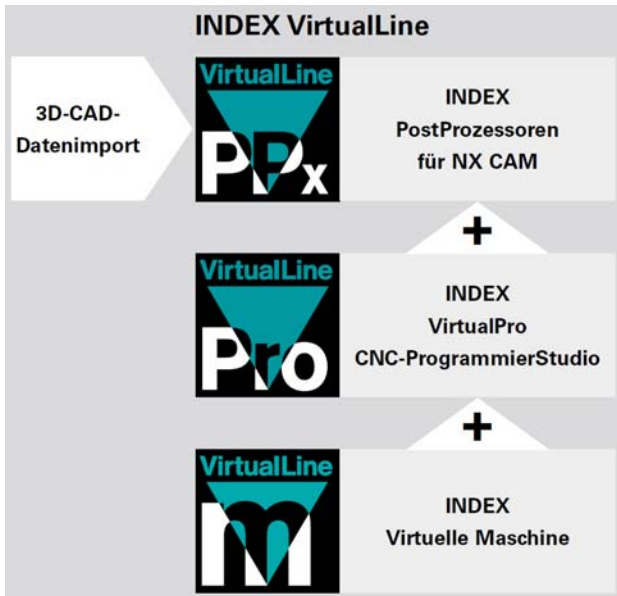


Figure 3: VirtualLine software products as an optimized complement for top efficiency in manufacturing



Figure 4: The VPC Box located directly next to the control brings the Virtual Machine or other Windows applications directly to the operator



Figure 5: Stainless steel handle sleeve for a dental-surgical instrument